

What is claimed is:

1. A method for facilitating a delivery of a desired molecule into a target tissue comprising the steps of:

5 introducing a molecule into a target tissue comprising a cell; and
 applying a substantially continuous low-level electric field to the target tissue for a duration sufficient to effect a change in porosity of the cell of the target tissue sufficient to facilitate entry of a desired molecule into an interior of the cell.

10 2. The method recited in Claim 1, wherein a duration of the applying step comprises a duration in a range of 0.1 seconds to 20 minutes.

15 3. The method recited in Claim 2, wherein the duration is in a range of 100 ms to 100 sec.

 4. The method recited in Claim 1, wherein the low-level electric field has a field strength comprising 200 V/cm or less.

20 5. The method recited in Claim 1, wherein the applying step comprises applying the low-level electric field in a series of electric pulses.

 6. The method recited in Claim 1, wherein the electric field comprises a pulse selected from a group of waveforms consisting of square, rectangular, exponentially

decaying, exponentially increasing, bipolar, and sinusoidal; waveforms having a nongeometrically characterizable shape; waveforms characterizable by a mathematical function; waveforms characterizable by a mathematical approximation; waveforms with at least one of an AC or a DC offset signal; and waveforms without an AC or a DC offset signal.

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7. The method recited in Claim 6, wherein the electric field comprises a pulse comprising a combination of at least two of the pulses selected from the group of waveforms.

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8. The method recited in Claim 1, wherein the introducing step comprises the step selected from a group consisting of syringe injection, jet injection, oral dosing, transdermal delivery, infusion into tissue, and infusion into a blood vessel.

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9. The method recited in Claim 1, further comprising the step, prior to the introducing step, of constructing a plasmid comprising DNA and a cDNA insert that codes for a desired molecule, and wherein the introducing step comprises introducing the plasmid into the target tissue.

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10. The method recited in Claim 1, wherein the target tissue is selected from a group consisting of skin, tumor, muscle, blood, blood vessel, brain, lymph, liver, pancreas, bone, colon, cardiac, lung, breast, testes, cornea, prostate, and intestine.

11. A system for facilitating a delivery of a desired molecule into a target tissue comprising:

means for introducing a molecule into a target tissue comprising a cell; and

means for applying a substantially continuous low-level electric field to the

target tissue for a duration sufficient to effect a change in porosity the cell of the target tissue sufficient to facilitate an entry of a desired molecule into an interior of the cell.

12. The system recited in Claim 11, wherein the applying means comprises an applicator adapted to deliver a field having a duration in a range of 0.1 seconds to 20 minutes.

13. The system recited in Claim 12, wherein the duration is in a range of 100 ms to 100 sec.

14. The system recited in Claim 11, wherein the low-level electric field has a field strength comprising 200 V/cm or less.

15. The system recited in Claim 11, wherein the applying means comprises means for applying the low-level electric field in a series of electric pulses.

16. The system recited in Claim 11, wherein the electric field comprises a pulse selected from a group consisting of square, rectangular, exponentially decaying, exponentially increasing, bipolar, and sinusoidal; waveforms having a nongeometrically

characterizable shape; waveforms characterizable by a mathematical function; waveforms characterizable by a mathematical approximation; waveforms with at least one of an AC or a DC offset signal; and waveforms without an AC or a DC offset signal.

5 **17.** The system recited in Claim 16, wherein the electric field comprises a pulse comprising a combination of at least two of the pulses selected from the group of waveforms.

10 **18.** The system recited in Claim 11, wherein the introducing means comprises an introducer selected from a group consisting of a syringe, a jet injector, an oral dose, means for effecting transdermal delivery, means for infusion into tissue, and means for infusion into a blood vessel.

15 **19.** The system recited in Claim 11, further comprising means for constructing a plasmid comprising DNA and a cDNA insert that codes for a desired molecule.

20 **20.** The system recited in Claim 11, wherein the target tissue is selected from a group consisting of skin, tumor, muscle, blood, blood vessel, brain, lymph, liver, pancreas, bone, colon, cardiac, lung, breast, testes, cornea, prostate, colon, and intestine.